# Portfolio Analysis

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```r
#install.packages("quantmod")
#install.packages("PerformanceAnalytics")
#install.packages("tidyverse")
#install.packages("ROI")
#install.packages("ROI.plugin.glpk")
#install.packages("ROI.plugin.quadprog")
#install.packages("tidyquant")
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.2 --
## v ggplot2 3.3.6      v purrr   0.3.5
## v tibble  3.1.8      v dplyr   1.0.10
## v tidyr   1.2.1      v stringr 1.4.1
## v readr   2.1.3      v forcats 0.5.2
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```r
library(quantmod)
```

```
## Loading required package: xts
## Loading required package: zoo
##
## Attaching package: 'zoo'
##
## The following objects are masked from 'package:base':
##
##     as.Date, as.Date.numeric
##
##
## Attaching package: 'xts'
##
## The following objects are masked from 'package:dplyr':
##
##     first, last
##
## Loading required package: TTR
## Registered S3 method overwritten by 'quantmod':
##   method            from
##   as.zoo.data.frame zoo
```

```r
library(PerformanceAnalytics)
```

```
##
```

```
## Attaching package: 'PerformanceAnalytics'
##
## The following object is masked from 'package:graphics':
##
##     legend
```

```
library(tidyr)
library(tidyquant)
```

```
## Loading required package: lubridate
##
## Attaching package: 'lubridate'
##
## The following objects are masked from 'package:base':
##
##     date, intersect, setdiff, union
```

```
#Getting stock data from yahoo
tickets <- c("BDMS.BK", "ADVANC.BK", "FMT.BK", "ASP.BK", "SPCG.BK")
weights <- c(.20, .20, .20, .20, .20)

portfolioPrices <- NULL
for(ticket in tickets) {
  portfolioPrices <- cbind(portfolioPrices, getSymbols.yahoo(ticket, from='2021-01-01', periodicity = 'c
}
head(portfolioPrices)
```

```
##            BDMS.BK.Close ADVANC.BK.Close FMT.BK.Close ASP.BK.Close
## 2021-01-04          20.8           176.0         19.4         2.18
## 2021-01-05          21.2           178.5         19.4         2.24
## 2021-01-06          20.9           179.5         19.4         2.22
## 2021-01-07          21.2           180.5         19.4         2.28
## 2021-01-08          21.7           184.5         19.4         2.26
## 2021-01-11          21.3           182.0         19.3         2.24
##            SPCG.BK.Close
## 2021-01-04          20.0
## 2021-01-05          20.6
## 2021-01-06          20.3
## 2021-01-07          20.4
## 2021-01-08          20.3
## 2021-01-11          20.7
```

```
#Delete missing Value
portfolioReturns <- na.omit(ROC(portfolioPrices))
#checking missing value
colSums(is.na(portfolioPrices))
```

```
##   BDMS.BK.Close ADVANC.BK.Close    FMT.BK.Close    ASP.BK.Close   SPCG.BK.Close
##               0               0               0               0               0
```

```
#Getting Benchmark Data from yahoo
benchmarkPrices <- getSymbols.yahoo('^SET.BK', from='2021-01-01', periodicity = 'daily', auto.assign=FA
```

```
## Warning: ^SET.BK contains missing values. Some functions will not work if
## objects contain missing values in the middle of the series. Consider using
## na.omit(), na.approx(), na.fill(), etc to remove or replace them.
```

```r
#Delete missing Value
benchmarkReturns <- na.omit(ROC(benchmarkPrices))
#checking missing value
colSums(is.na(benchmarkReturns))
```

```
## SET.BK.Close
##            0
```

```r
#calculate portfolio return
portfolioReturn <- Return.portfolio(portfolioReturns, weights = weights)
head(portfolioReturn)
```

```
##            portfolio.returns
## 2021-01-05       0.017972538
## 2021-01-06      -0.006517700
## 2021-01-07       0.010305895
## 2021-01-08       0.006265467
## 2021-01-11      -0.005500207
## 2021-01-12       0.008679535
```

```r
#CAPM
CAPM.beta(portfolioReturn, benchmarkReturns, 0.35/252)
```

```
## [1] 0.4883926
```

```r
#shapeRatio
SharpeRatio(portfolioReturn, 0.35/252)
```

```
##                                portfolio.returns
## StdDev Sharpe (Rf=0.1%, p=95%):      -0.10881394
## VaR Sharpe (Rf=0.1%, p=95%):         -0.07722306
## ES Sharpe (Rf=0.1%, p=95%):          -0.05924814
```

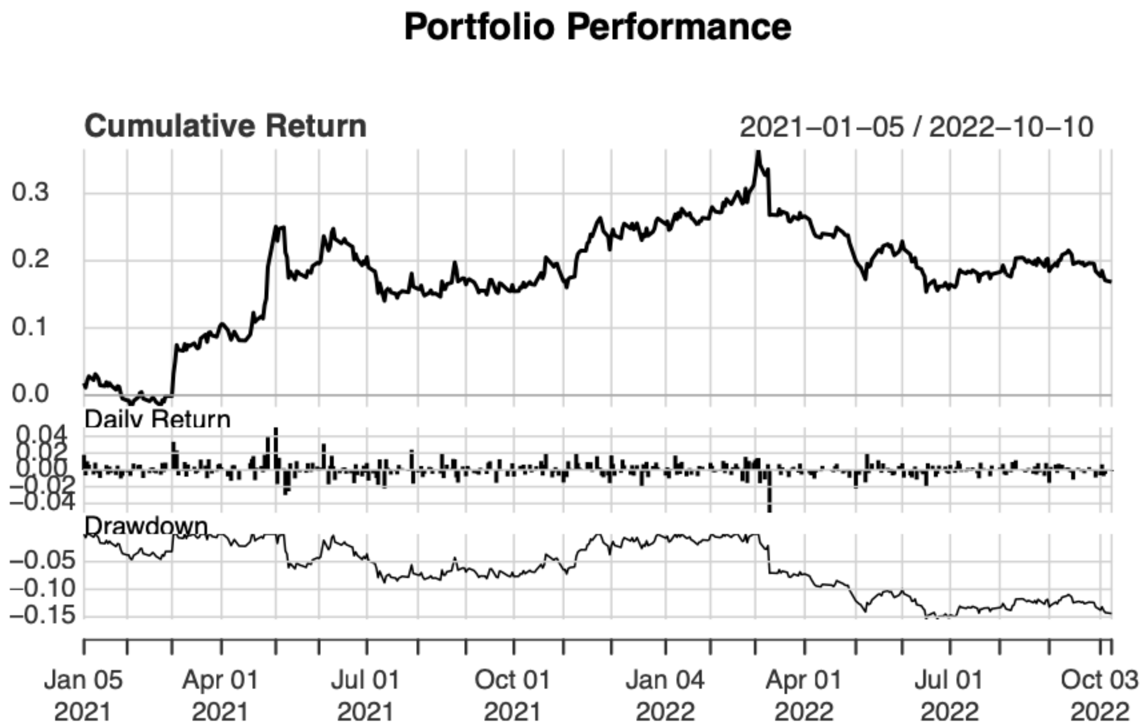
```r
table.AnnualizedReturns(portfolioReturn)
```

```
##                           portfolio.returns
## Annualized Return                    0.0963
## Annualized Std Dev                   0.1435
## Annualized Sharpe (Rf=0%)            0.6709
```

```r
table.CalendarReturns(portfolioReturn)
```

```
##       Jan Feb Mar  Apr May  Jun  Jul Aug  Sep  Oct  Nov Dec portfolio.returns
## 2021 -0.7 0.9 0.7  4.1 0.4 -0.3 -1.6 0.0  0.8 -0.7 -1.6 0.3               2.2
## 2022 -0.1 0.9 0.1 -0.9 0.4 -0.5  0.5 0.1 -0.9 -0.1   NA  NA              -0.5
```

```r
PerformanceAnalytics::charts.PerformanceSummary(portfolioReturn,
                                                Rf=0.01, main = "Portfolio Performance")
```


Portfolio Performance
Cumulative Return
2021−01−05 / 2022−10−10
0.3
0.2
0.1
0.0
Daily Return
0.04
0.02
0.00
−0.02
−0.04
Drawdown
−0.05
−0.10
−0.15
Jan 05 2021
Apr 01 2021
Jul 01 2021
Oct 01 2021
Jan 04 2022
Apr 01 2022
Jul 01 2022
Oct 03 2022